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Supplement of

Response of winter fine particulate matter concentrations to emission and meteorology changes in North China

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Figure S1. Model domain settings

Figure S2. The impacts of boundary conditions on monthly averaged $PM_{2.5}$ concentrations in the innermost domain

Figure S3. Averaged VOC:NOx ratios in 1960(a) and 2010(b)

Figure S4. Changes in LWP due to temperature perturbations

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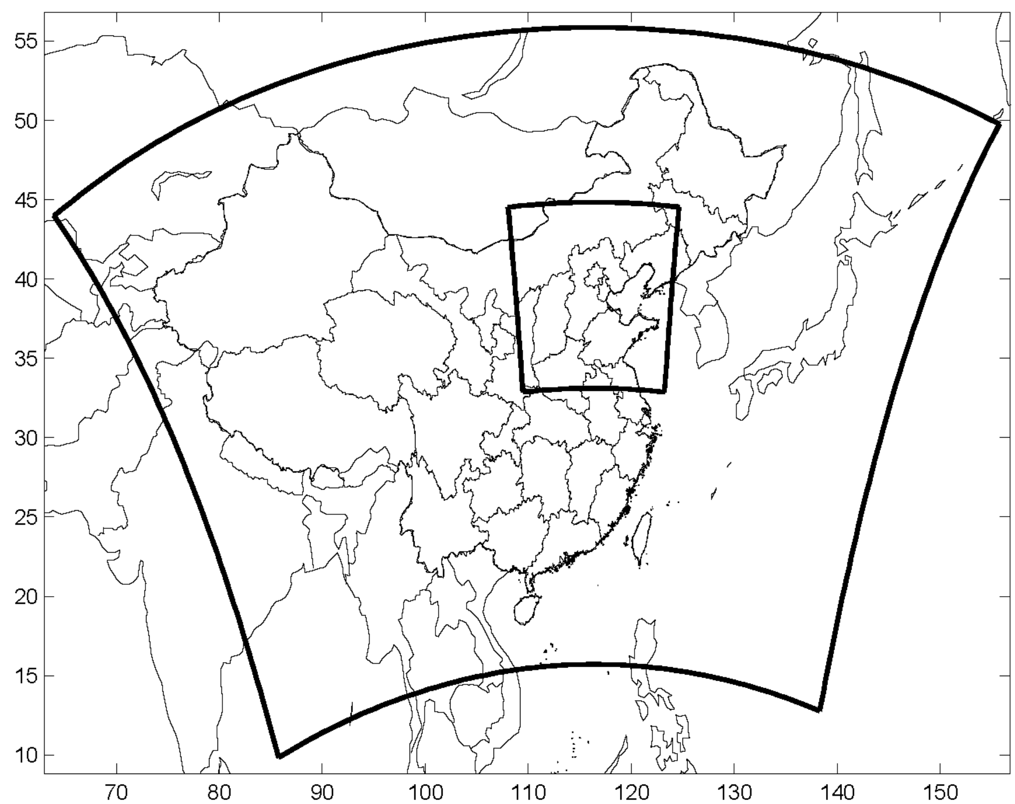
Figure S6. Monthly mean changes of sulfate (a), nitrate (b), ammonium (c), BC (d), OC (e), and $PM_{2.5}$ (f) and due to temperature increase based on 2010 emission levels

Figure S7. Monthly mean changes of $PM_{2.5}$ (a), LWP (b), and AOD at 600nm (c) due to RH decrease based on 2010 emission levels



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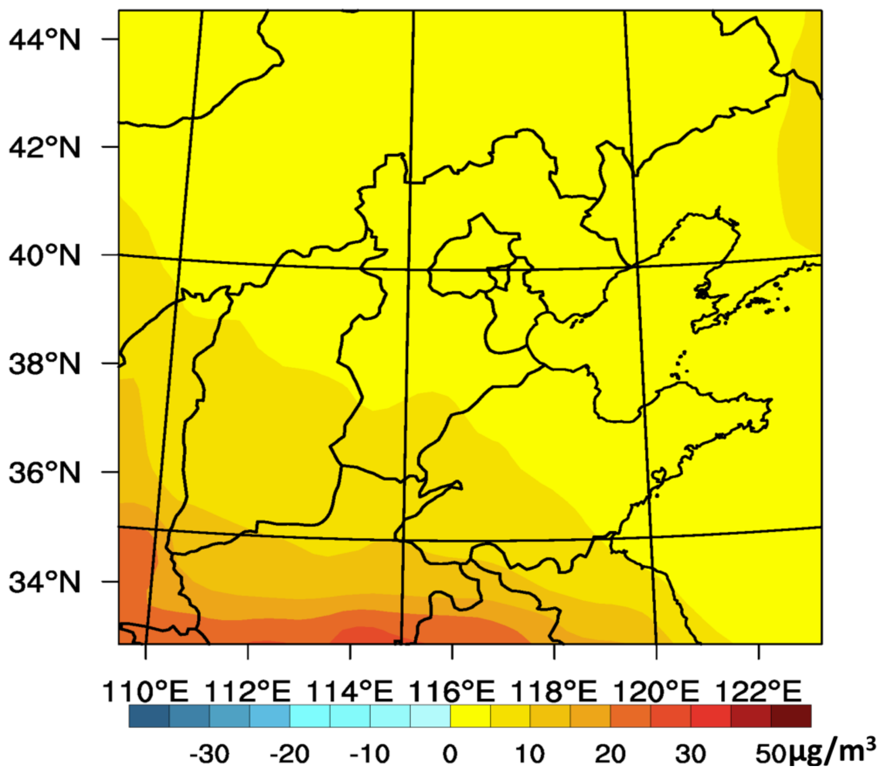

Figure S2. The impacts of boundary conditions on monthly averaged $PM_{2.5}$ concentrations in the innermost domain

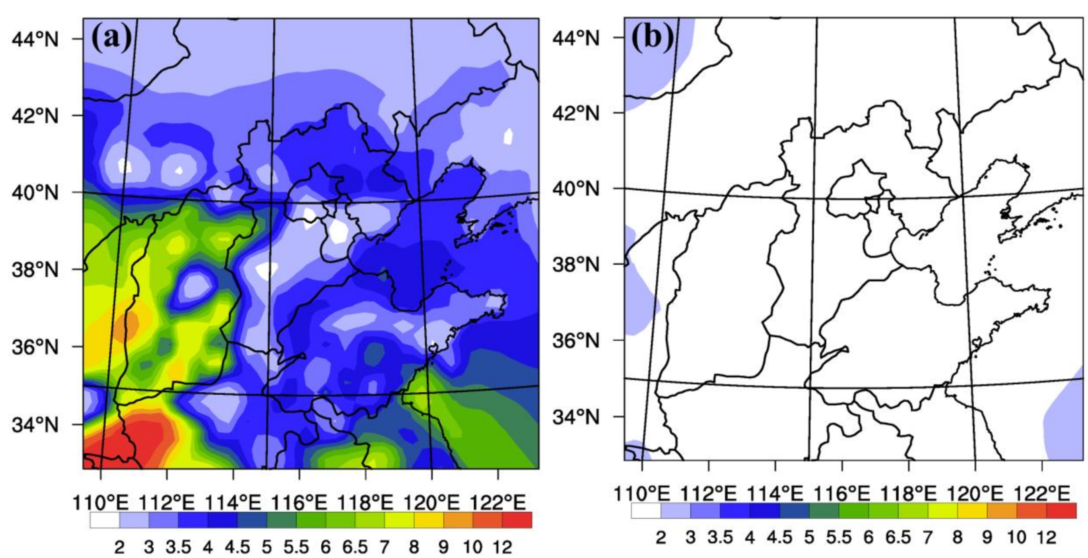

Figure S3. Averaged VOC:NOx ratios in 1960(a) and 2010(b)

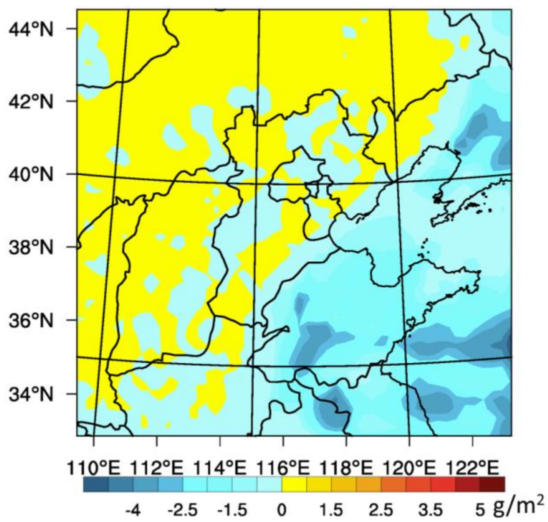

Figure S4. Changes in LWP due to temperature perturbations

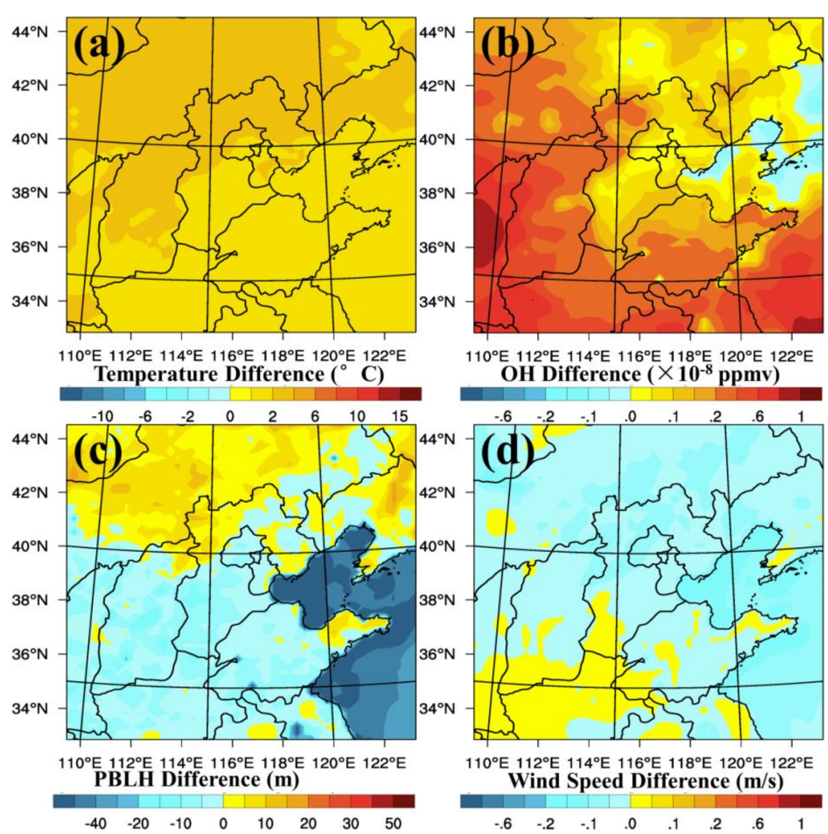

Figure S5. Monthly mean temperature difference due to perturbation in initial and boundary conditions (a), and daily mean OH (b), mean PBLH (c) and mean near surface wind speed changes (d) due to temperature increase based on 2010 emission levels

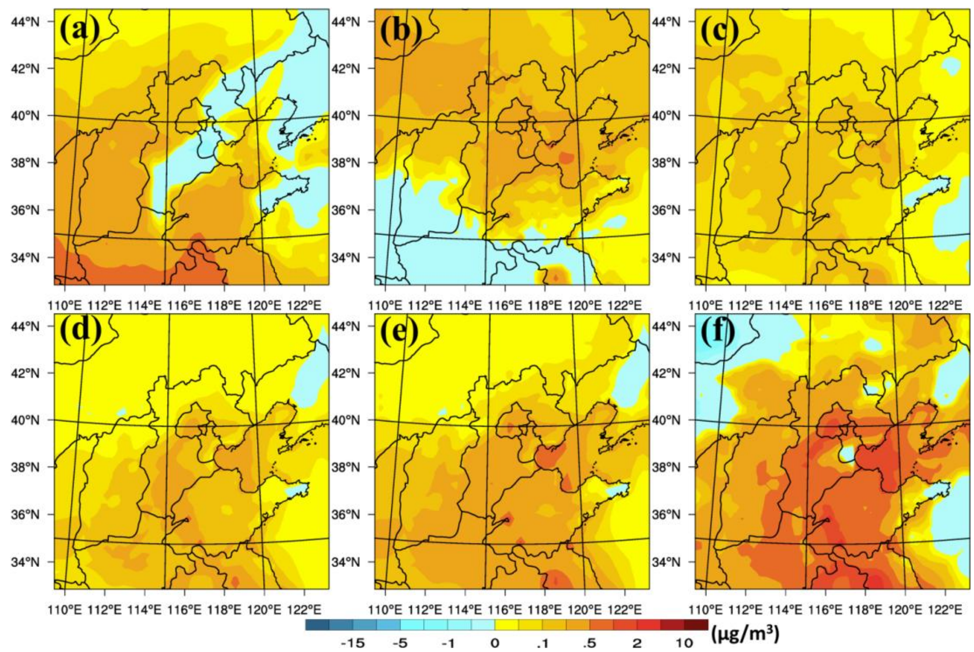

Figure S6. Monthly mean changes of sulfate (a), nitrate (b), ammonium (c), BC (d), OC (e), and $PM_{2.5}$ (f) and due to temperature increase based on 2010 emission levels

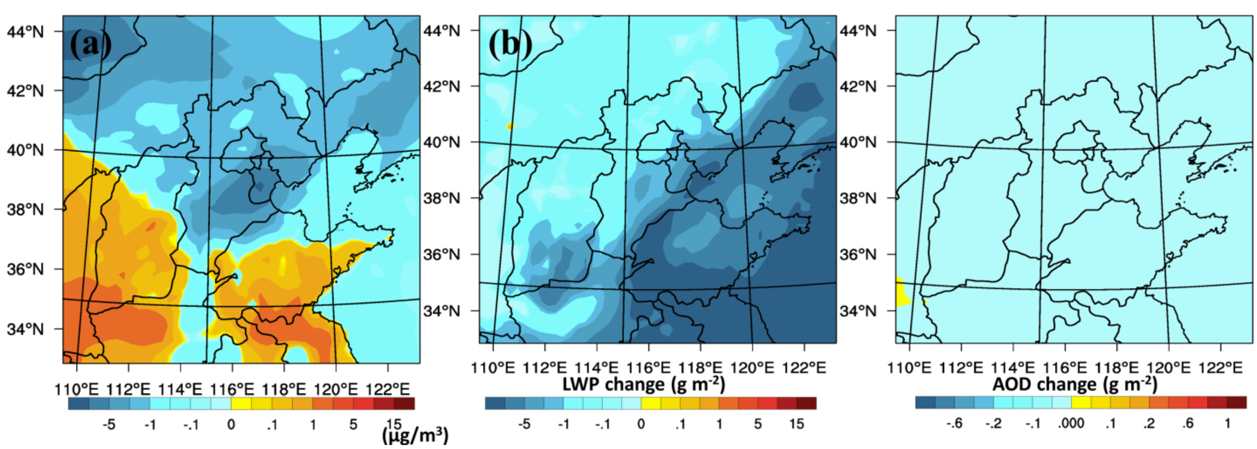

Figure S7. Monthly mean changes of $PM_{2.5}$ (a), LWP (b), and AOD at 600nm (c) due to RH decrease based on 2010 emission levels